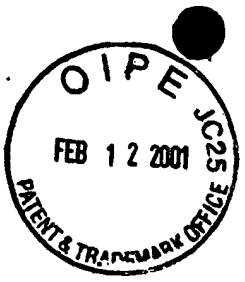

REMARKS

Applicant notes with appreciation the allowance of claims 1, and 25-29. The claims have been amended by rewriting claims 1, 4, 11, 12, 13, 14, 15, 16, 17, 18, 25, 28, and 29 and canceling original claim 24. No new claims have been added. Claims 1-23 and 25-31 remain in the application. In view of the amendments and remarks herein, reconsideration of this application is respectfully requested.

The present invention is directed to a multi-layered inductively coupled helical directional coupler that includes an upper and lower connecting plates with external flanges parallel to transmission line for coupling RF energy for forward power detection. The coupling device incorporated a helix structure with rotation centered near or about the transmission line and incorporates embedded secondary structures which are parallel to the transmission line and fixed a predetermined distance from the transmission line. The overall structure creates a coupler having greater overall efficiency per unit length of transmission line.

In the first office action, the disclosure was objected to has having various informal problem and the drawings were objected to has having improper markings. Moreover, claims 2-31 were rejected under 35 U.S.C. § 112(2) as indefinite for failing to particularly point out and distinctly claim the subject matter of the invention. Claims 30 and 31 were rejected under §102(b) as anticipated by Peter.

Informalities in the specification have been addressed and corrected by Applicant. Specifically the informal problems as noted by the Examiner have been corrected and additional verbage as been added to the specification in order to better define the invention. No new matter has been added.

With regard to the rejection under § 112(2), claims 2 and 3 function to further narrow claim 1 by defining the dielectric media that the coupling geometry is embedded. The coupling structure described in claim 1 is taken in its entirety as the coupling "device". Claim 1 discloses the coupling geometry without regard to the surrounding dielectric material.

Claim 2 is the same geometry as claim 1, embedded into a stripline dielectric structure. A stripline structure is one in which the main transmission line lies on the surface of a non-air dielectric material, with the upper face of the transmission line being directly expose to the air. Thus, for claim 2, the upper plates distributed above the main transmission line (as described in claim one) are functionally "air bridges" while the lower plates distributed below the main transmission line are embedded into a non-air dielectric.

Claim 3 is the same geometry as claim 1, embedded into a microstrip dielectric structure. A microstrip structure is one in which the main transmission line is completed embedded into a non-air dielectric material. The upper and lower plate structures can still be in different dielectric materials; however, the materials are not air.

Claim 4 is a variation of claim 1, in that the coupling device of claim 1 is composed of multiple elements that may be incorporated into a multi-layered printed circuit board. Claim 4 does not define a main transmission line as does claim 1, but describes a differing geometry of the a coupling structure, such that the main transmission line of claim 1 could itself be a coupler structure to RF energy in the second and third coupling geometries as described in claim 4. In general, claim 4 defines a coupling inter-relationship between the first, second and third coupling structure when RF energy is applied to any one of these coupling structure.

Claim 5 defines the first coupling structure as a transmission line, claim 6 and claim 7 follow the same microstrip and stripline argument of claims 2 and 3. While claim 8 specifies a forward coupling structure as a "Helix." Claim 9 specifies a reverse coupling structure.

Claims 10 and 11 further refine the helix structure of the second and third coupling structure so that the structure includes conductors that are oriented in parallel to the main transmission line.

The ground layers referred to in Claim 12 isolate the structure form any support circuitry (diode rectifiers, RF detectors, etc.) into which the coupling structure (the transmission line AND the connecting structures of claim 12) is embedded. This implies that interconnections to outside circuitry must not interfere with the coupling geometry. This

claim defines the connectivity function of the upper and lower plates that are in the same plane as the transmission line, allowing the plurality of vias to function as the primary coupling point of the structure (i.e., Z plane coupler). Claim 18 should be amended. The term "plurality of lower" should be changed to "plurality of upper."

Claim 20 describes the orientation of the secondary structure such that they are parallel to the transmission line. The secondary structures are embedded into either the first or second (upper or lower respectively) connecting structure dependant on whether it refers to claim 16, 17, or 18.

Claim 23 has been amended such that "plurality of plurality" reads "plurality". Claim 24 has been cancelled. Claim 25 defines a "method" whereby "magnetic field coupling structures" are embedded into the "upper" and/or "lower" interconnecting structure. The magnetic field coupling structure is parallel and a predefined offset from main transmission line. The upper interconnecting structure is positioned in a plane (second plane) different from the main transmission line; said plane in generally positioned above and parallel to the plane of the main transmission line. In addition, the lower interconnecting structure is positioned in a third plane (different from the main transmission line plane and the upper interconnect plane). This third plane is generally located below and parallel to the plane of the main transmission line. The upper and lower

interconnecting structure is connected together electrically with at least one via, and the magnetic filed coupling structure is also electrically connected to the interconnect structure.

Claim 26 further defines claim 25 with a method specifying a forward coupling application (generally defines where the termination impedance is relative to the propagating RF energy on the main transmission line). Claim 27 is similar to claim 26 however it includes a reverse coupling application. Claim 28 specifies upper interconnecting structure as air bridges, making the main transmission line a micro-strip structure. This is same approach as in claim 2, 6, and 14.

Claim 29 specifies upper and lower interconnecting structure is embedded into a non-air dielectric material, making the interconnecting structure a strip line structure. This is same approach as in claim 3, 7, and 15.

With regard to the claim rejections under § 102(b), claim 30 and 31 are further define a structure that is neither taught nor suggested over Peter. Given that the plurality of secondary structures that are connected to the Helix for the purpose of improving the coupling efficiency this type of structure is in no way anticipated by Peter. There is no reference to any geometry attached to the Helix disclosed in Peter. Applicant respectfully suggests that the rejection on these grounds be withdrawn.

Accordingly, this application is believed to be in proper form for allowance and an early notice of allowance is respectfully requested. Should the Examiner has any comments or

suggestions that would expedite the allowance of this application, he is respectfully invited to telephone the undersigned.

Please charge any fees associated herewith, including extension of time fees, to Deposit Account No. 13-4774. A Fee Transmittal Letter is submitted herewith.

Respectfully submitted,

SEND CORRESPONDENCE TO:

Motorola, Inc.
Intellectual Property Section
Law Department
8000 West Sunrise Boulevard
Ft. Lauderdale, Florida 33322

By: _____
Frank M. Scutch, III
Attorney for Applicant
Reg. No.: 34,484
Telephone: (954) 723-6449
Fax No.: (954) 723-3871

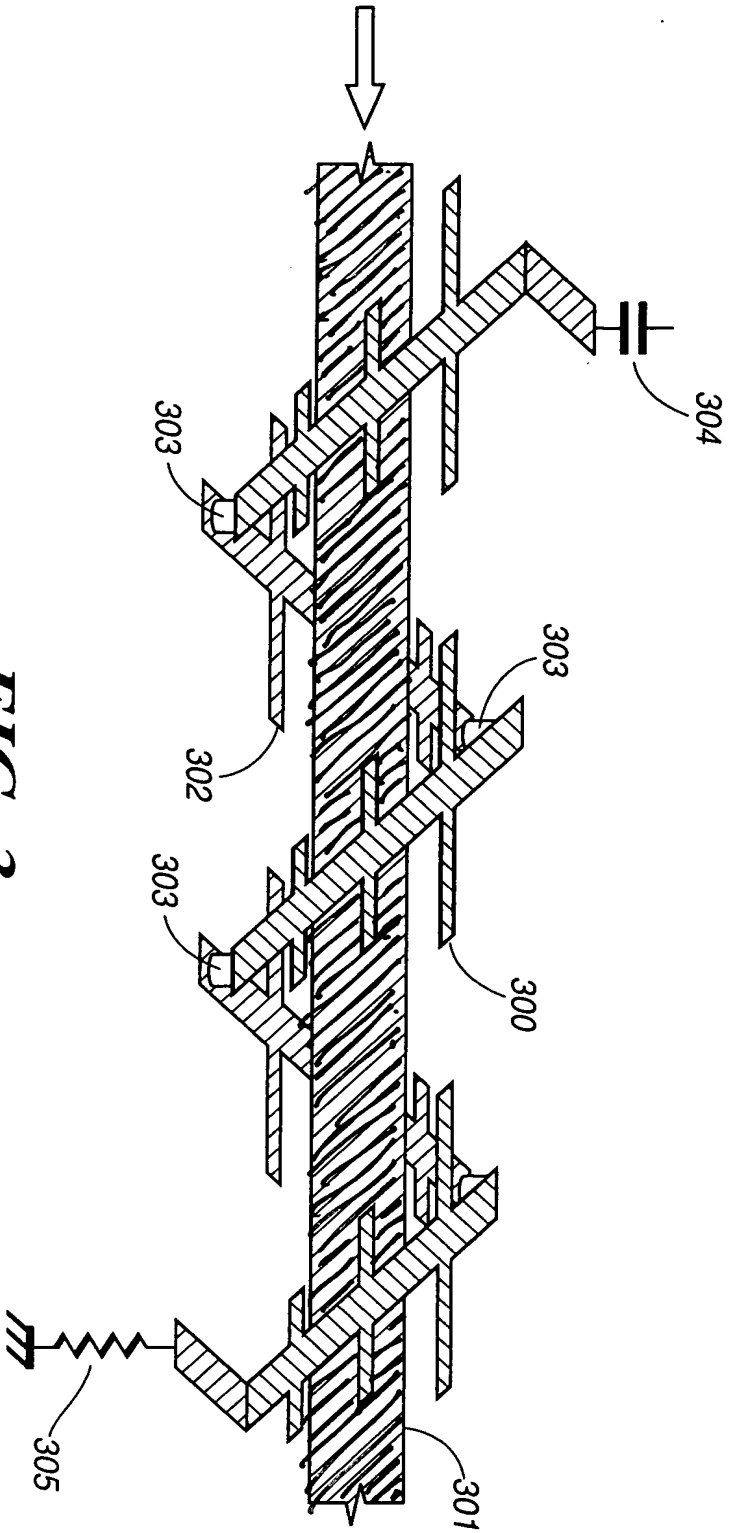

FIG. 3

Approved